

We claim:

1. A process for supplementing infant formula comprising:

(a) obtaining at least two different long chain polyunsaturated fatty acid containing microbial oils from at least two different microbial sources, and

(b) adding said oils to said infant formula.

2. The process of claim 1, wherein said oils are selected from omega-3 and omega-6 fatty acids.

3. A process for altering the composition of infant formula, such that the relative amount of omega-3 and omega-6 polyunsaturated fatty acids in said formula is substantially similar to the amount of said polyunsaturated fatty acids contained in human breast milk which comprises:

(a) obtaining microbial oils containing said polyunsaturated fatty acids from at least two species of microbes,

(b) blending said oils together, and

(c) adding said blend of oils to said infant formula in an amount effective to provide said formula with amounts of said polyunsaturated fatty acids substantially similar to the amounts in human breast milk.

4. The process of claim 3, wherein said oils are ARASCO and DHASCO.

5. The process of claim 4, wherein said DHASCO is blended with said ARASCO in a ratio of from about 1 to about 5 parts DHASCO to about 2 to about 12 parts ARASCO by weight of said blend.

6. The process of claim 5, wherein the ratio of DHASCO to ARASCO comprises about 1:3.

7. The process of claim 4, wherein said genera are selected from fungi and microalgae.

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8. The process of claim 7, wherein said fungi comprise *Pythium* or *Mortierella*.

9. The process of claim 8, wherein said microalgae comprise *Cryptocodinium* sp.

10. The process of claim 7, wherein said fungi comprises *Pythium* or *Mortierella* and said microalgae comprises *Cryptocodinium*.

11. The process of claim 10, wherein said *Pythium* comprises *P. insidiosum*, said *Mortierella* comprises *M. alpina* and said *Cryptocodium* comprises *C. cohnii*.

12. The process of claim 4, wherein said oil further comprises EPASCO.

13. The process of claim 12, wherein said genera are selected from fungi and microalgae.

14. The process of claim 13, wherein said fungi comprise *Pythium* or *Mortierella*.

15. The process of claim 13, wherein said microalgae comprise *Cryptocodinium* and *Nitzschia*.

16. The process of claim 13, wherein said fungi comprise *Pythium* and *Mortierella* and said microalgae comprises *Cryptocodinium* and *Nitzschia* sp.

17. The process of claim 16, wherein said *Pythium* comprises *P. insidiosum* and said *Cryptocodium* comprises *C. cohnii* and said *Nitzschia* comprises *N. alba* and said *Mortierella* comprises *M. alpina*.

18. The process of claim 3, further comprising blending said microbial oils with fish oil prior to adding said blend to said infant formula.

19. The process of claim 18, wherein said fish oil comprises about 1 part and said microbial oils comprise from about 1 to about 15 parts by weight of said blend.

20. The process of claim 19, wherein said microbial oils are selected from DHASCO and ARASCO and

the ratio of said oils comprises about one part fish oil to ten parts ARASCO to three parts DHASCO.

Sub 131 21. A process for making a supplement for infant formula, comprising:

- (a) obtaining a DHA-containing microbial oil and
- (b) blending said oil with a gamma linolenic acid-containing oil, thereby producing said supplement.

22. The process of claim 21, wherein said linolenic acid-containing oil comprises primrose, borage, or black currant seed oil.

3 23. The process of claim 21, wherein said linolenic acid containing-oil comprises a microbial oil.

4 24. The process of claim 23, further comprising obtaining said linolenic acid-containing oil from *Mucor javanicus* or *Mortierella isabellina*.

5 25. The process of claim 21, further comprising blending ^{an EPA-containing oil} with said DHA-containing microbial oil and said linolenic acid-containing oil ~~an EPA-containing oil~~.

6 26. The process of claim 25, wherein said EPA-containing oil comprises fish oil.

7 27. The process of claim 26, wherein said fish oil comprises about one part, said linolenic acid-containing oil comprises about 4 parts and said DHA-containing oil comprises about 1 part by weight of said blend.

8 28. The process of claim 26, wherein said fish oil comprises about one part, said linolenic acid-containing oil comprises about 4 parts and said DHA-containing oil comprises about 1 part by weight of said blend.

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29. A composition comprising a blend of at least two long-chain polyunsaturated fatty acid-containing microbial oils.

30. The composition of claim 29, wherein said oils are selected from ARASCO and DHASCO.

31. The composition of claim 30, wherein said DHASCO is blended with said ARASCO such that a ratio of from about 1 to about 5 parts DHA and about 2 to about 12 parts ARA by weight of said blend is obtained.

32. The composition of claim 31, wherein the ratio of DHA to ARA comprises about 1:3 respectively.

33. The composition of claim 30, wherein said oil further comprises EPASCO.

34. The composition of claim 29, wherein said composition further comprises fish oil.

35. The composition of claim 34, wherein said fish oil comprises about 1 part and said microbial oils comprise from about 1 to about 15 parts by weight of said blend.

Sub B2) 36. A composition comprising a blend of a DHA-containing microbial oil and a gamma linolenic acid-containing oil.

37. The composition of claim 36, wherein said linolenic acid-containing oil comprises primrose, borage, or black currant seed oil.

38. The composition of claim 36, wherein said linolenic acid containing-oil is an oil obtained from a microbe.

39. The composition of claim 38, wherein said microbe comprises *Mucor javanicus* or *Mortierella isabellina*.

Sub B3) 40. The composition of claim 36, further comprising on EPA-containing oil.

14 41. The composition of claim ¹³40, wherein said EPA-containing oil comprises fish oil.

18 42. The composition of claim ¹⁴41, wherein said fish oil comprises about one part, said linolenic acid-containing oil comprises about 4 parts and said DHA-containing oil comprises about 1 part by weight of said blend.

43. Nutritional supplements comprising mixtures of polyunsaturated fatty acid-containing microbial oil.

44. Nutritional supplements comprising mixtures of DHASCO and a gamma linolenic acid-containing oil.

45. Nutritional supplements comprising mixtures of ARASCO and fish oils.

46. The supplement of claim 43, further comprising fish oil.

47. The supplement of claim 46, wherein said fish oil comprises about 1 part and said microbial oils comprise from about 1 to about 15 parts by weight of said supplement.

48. The supplement of claim 47, wherein said microbial oils comprise DHASCO and ARASCO and the ratio of said oils comprises about one part fish oil to ten parts ARASCO to three parts DHASCO.

49. The supplement of claim 43, wherein said mixture comprises ARASCO and DHASCO.

50. The supplement of claim 49, wherein said DHASCO is blended with said ARASCO in a ratio of from about 1 to about 5 parts DHASCO to about 2 to about 12 parts ARASCO by weight of said supplement.

51. The supplement of claim 50, wherein the ratio of DHASCO to ARASCO comprises about 1:3.

52. The supplement of claim 44, wherein said linolenic acid-containing oil comprises primrose, borage, or black currant seed oil.

53. The supplement of claim 44, wherein said linolenic acid containing-oil is obtained from a microbe.

54. The supplement of claim 53, wherein said microbe comprises *Mucor javanicus* or *Mortierella isabellina*.

55. The supplement of claim 44, further comprising an EPA-containing oil.

56. The supplement of claim 55, wherein said EPA-containing oil comprises fish oil.

57. The supplement of claim 56, wherein said fish oil comprises about one part, said linolenic acid-containing oil comprises about 4 parts and said DHA-containing oil comprises about 1 part by weight of said blend.

58. The supplement of claim 43, wherein said supplement is a human nutritional supplement.

59. The supplement of claim 58, wherein said human is a baby.

60. The supplement of claim 58, wherein said human is a pregnant or nursing woman.

61. The composition of claim 29, wherein said composition comprises an additive for supplementing an infant formula.

62. The composition of claim 29, wherein said composition comprises a total parenteral nutritional formula.

63. The composition of claim 34, said composition comprising an additive for supplementing an infant formula.

64. The composition of claim 34, wherein said composition comprises a total parenteral nutritional formula.

65. The composition of claim 36, wherein said composition comprises an additive for supplementing an infant formula.

66. The composition of claim 36, wherein said composition comprises a total parenteral nutritional formula.

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